2017 Design Training Expo

Survey123 & Collector for ArcGIS, A Powerful Combination

Rebecca Barber

Overview

- Why, What, Who & How
- FDOT GIS Platform
- eMaintenance Vision
- Mobile Platform Implementation
- Challenges
- Questions

Why?

- On September 11, 2015, the Federal Highway Administration (FHWA) released the findings of the FHWA-AASHTO Joint Task Force in a report titled, “Report from Joint AASHTO-FHWA Task Force on Guardrail Terminal Crash Analysis.”
- One of the recommendations in the findings was to conduct in-service performance evaluations of guardrail approach terminals that have been installed on roads

Why?

- Based on this recommendation, the Department decided to move forward with conducting in-service performance evaluations

What?

In-Service Performance Evaluation (ISPE)

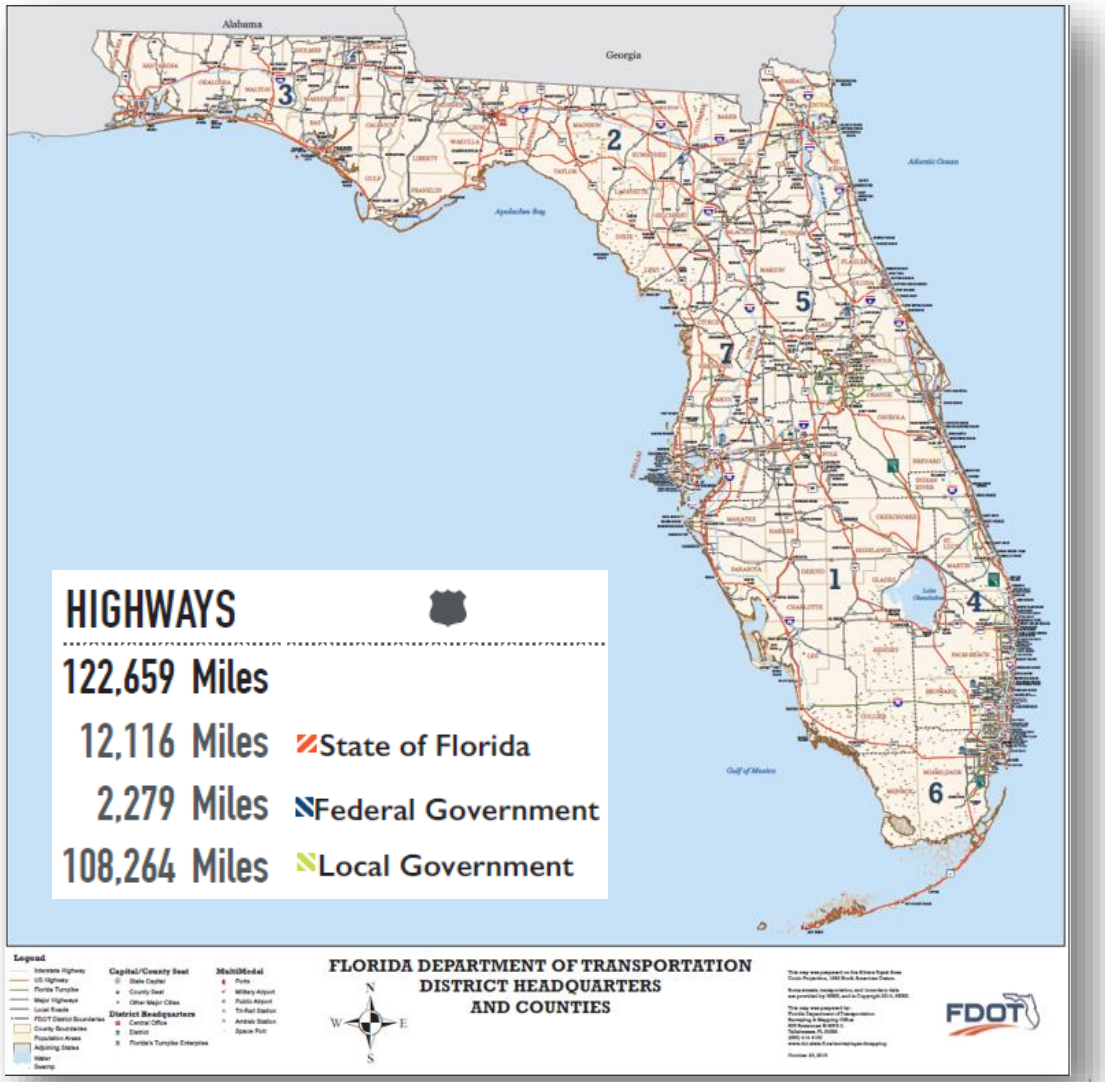
It is the gathering and evaluation of data to assess the safety performance of crash cushions and guardrail approach terminals that have been installed along Florida roads.

What?

- Three Phases
  - Phase 1. Collection of Inventory Data
  - Phase 2. Collection of Incident Data
  - Phase 3. Evaluation of Data

Department Overview

- Decentralized
- Highway mileage
- 207 Billion Auto Vehicle Miles traveled in 2015



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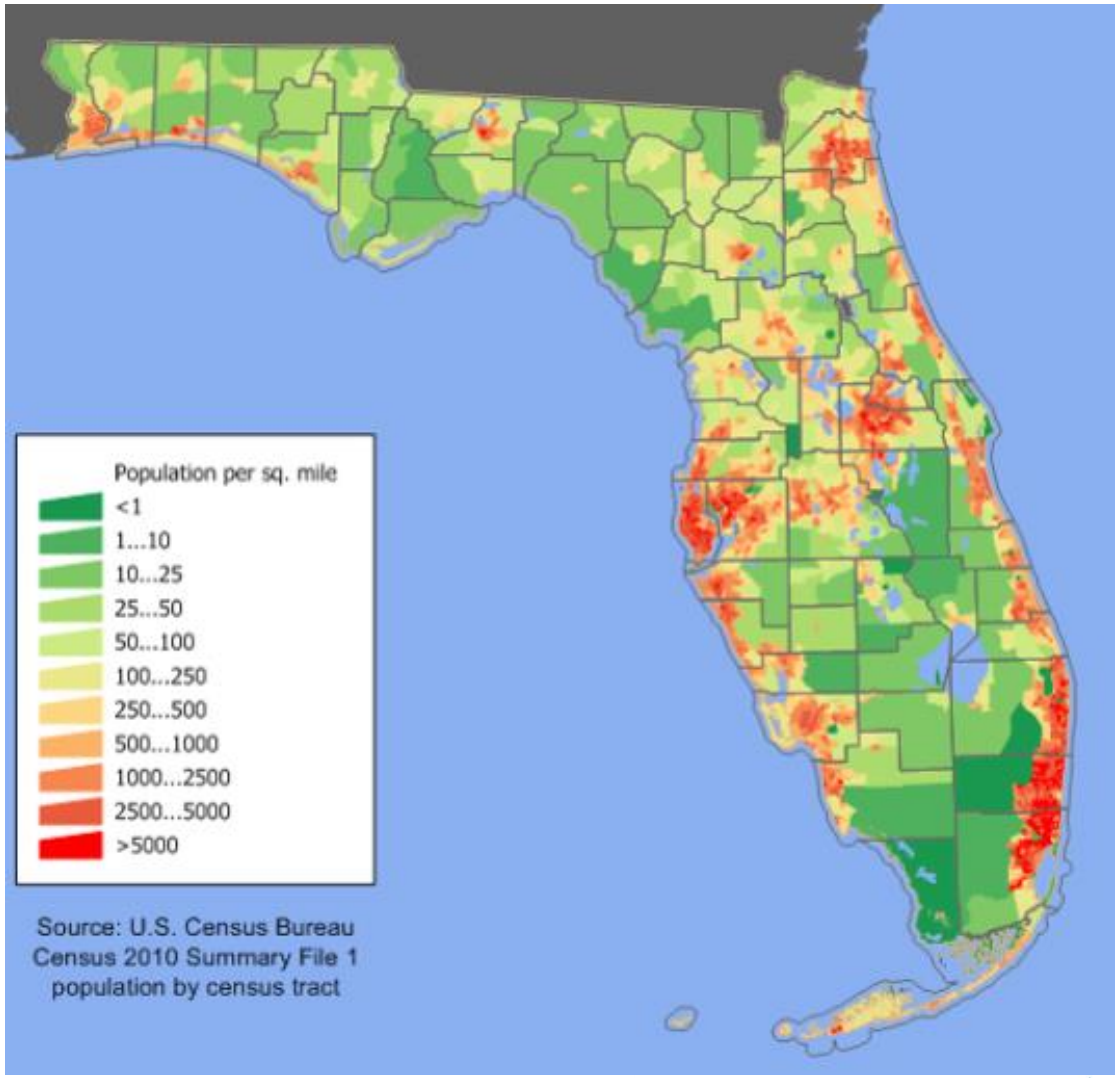
Department Overview

- Decentralized
- Highway mileage
- 207 Billion Auto Vehicle Miles traveled in 2015
- 3rd most populous state



Who?

- These evaluations will be performed by the joint efforts of the Offices of
  - Safety,
  - Design,
  - Traffic Operations,
  - Program Management
  - Maintenance, along with
  - District Operations
    - Internal
    - External

Statewide Task Team

District	In-Service Performance Evaluation
CO	Rudy Powell
CO	Kirk Hutchison
CO	Kristin McCrary
CO	Dale Cook/ Tim Allen
1	Paul Barnes
2	Paul Grochowski
3	Windle Tharp
4	Zachary Taylor
5	Barry Hallman
6	David Calhoun
7	Pedro Lopez
TP	Trevor Colley

Who?

The three phases of the In-Service Performance Evaluation

- Phase 1. Collection of Inventory Data Maintenance
- Phase 2. Collection of Incident Data Maintenance
- Phase 3. Evaluation of Data Third Party- University

Office of Maintenance

- Contract Management
  - 48 active maintenance contracts maintaining Florida's State Highway System
- Structures Operations
  - 12,262 bridges
- Motor Carrier Size & Weight
- NPDES Storm water (National Pollutant Discharge Elimination System)
- Performance Management
  - Including Roadway Characteristic (RCI) data collection and management
- Program Resources
  - Funding
- Roadway Operation

Office of Maintenance

- Inventory, Inspection, and Evaluation
  - Roadway Characteristics Inventory (RCI)
  - Rest Area Inspections
  - Maintenance Rating Program (MRP)
  - Signs,
  - Guardrail, and
  - Crash cushion inspections

Phase 1

- Inventory data will be collected for:
  - Including type (manufacturer, make, model),
  - location, and
  - photos
- Approach terminals
  - Collected by in-house or contract maintenance forces as part of the guardrail inspection performed biennially
- Crash Cushions
  - Collected by in-house or contract maintenance forces as part of the crash cushion inspections performed every year

Phase 2

- Incident data is crash report information plus addition data
  - Type of incident
    - over/ under/ through
  - Location of impact
  - Photos

How has this Data been collected?

- Clipboards
- Paper Forms
- Pens & Pencils
- Camera
- Enter data manually into
  - A database
  - A spreadsheet

Paper Forms

FDOT Guardrail Approach Terminal and Crash Cushion Inventory

and Incident Documentation

Location Identification

District:	**Maintenance Unit/Cost Center:**	
State Route:	**County:**	**Roadway Section #:** **Roadway Subsection #:**
Mile Post:	**Latitude (Y):**	**Longitude (X):**
Posted Speed Limit (mph): 35 or less _____ 40 _____ 45 _____ 50 _____ 55 _____ 60 _____ 65 _____ 70 _____		**Offset:** Right _____ Left _____ Median _____
Nearest Intersecting Route:		**Distance from (miles):**

Inventory (always document with photographs):

27 " Guardrail Approach Terminal			
Best _____	Formet FX Flared _____	SKT – SP _____	TRACC 05 _____
CAT 350 _____	Formet TX Tangent _____	Softstop Mash End Terminal _____	Trend 350 _____
ET – 2000 _____	Heart _____	SRT - 27 SP _____	Trend 350 Tangent 1.9 _____
ET - 2000 LET _____	MELT _____	SRT 350 _____	WideTracc _____
ET – Plus _____	Regent _____	SRT 350 Eight Post _____	X-LITE Flared _____
FLEAT – MT _____	Regent – C _____	SRT HBA 6 post _____	X-LITE Parallel _____
FLEAT – SP _____	SKT – 350 _____	SRT Mash Flared _____	X-TENSION _____
FLEAT 350 _____	SKT – Lite _____	TRACC _____	Other _____
31 " Guardrail Approach Terminal			
ET Plus 31 ET _____	Softstop Mash FT _____	SRT Mash Flared ET _____	X-LITE TL-3 Flared _____
FLEAT - MT – MGS _____	SRT - 31 Flared ET (Steel Posts) _____	Trend 350 Flared ET _____	X-LITE TL-3 Parallel _____
FLEAT - SP – MGS _____	SRT - 31 Flared ET (Wood Posts) _____	Trend 350 Median ET _____	X-TENSION Flared _____
SKT - SP – MGS _____		Trend 350 Tangent ET _____	X-TENSION Parallel _____
			Other _____

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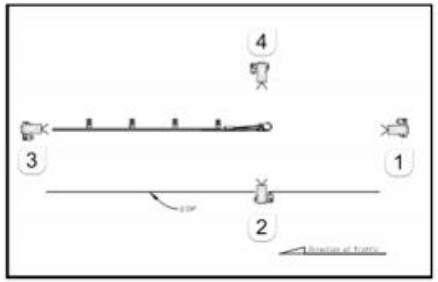
Paper Forms

Crash Cushion			
Adiem 350 _____	Hex Foam Sandwich _____	QuadGuard II _____	TAU-II _____
BrakeMaster 350 _____	Hi-Dro Cell (Cluster) _____	React 350 _____	TRACC _____
DRAG-NET _____	Hi-Dro Cell (Sandwich) _____	Sand (Energite) _____	X-MAS _____
Easi-Cell Cluster _____	QuadGuard _____	Sand (Fitch) _____	Other _____
G-R-E-A-T _____	QuadGuard Elite _____	SCI Smart Cushion _____	

Inventory Photographs: Take photographs as indicated in the diagram.

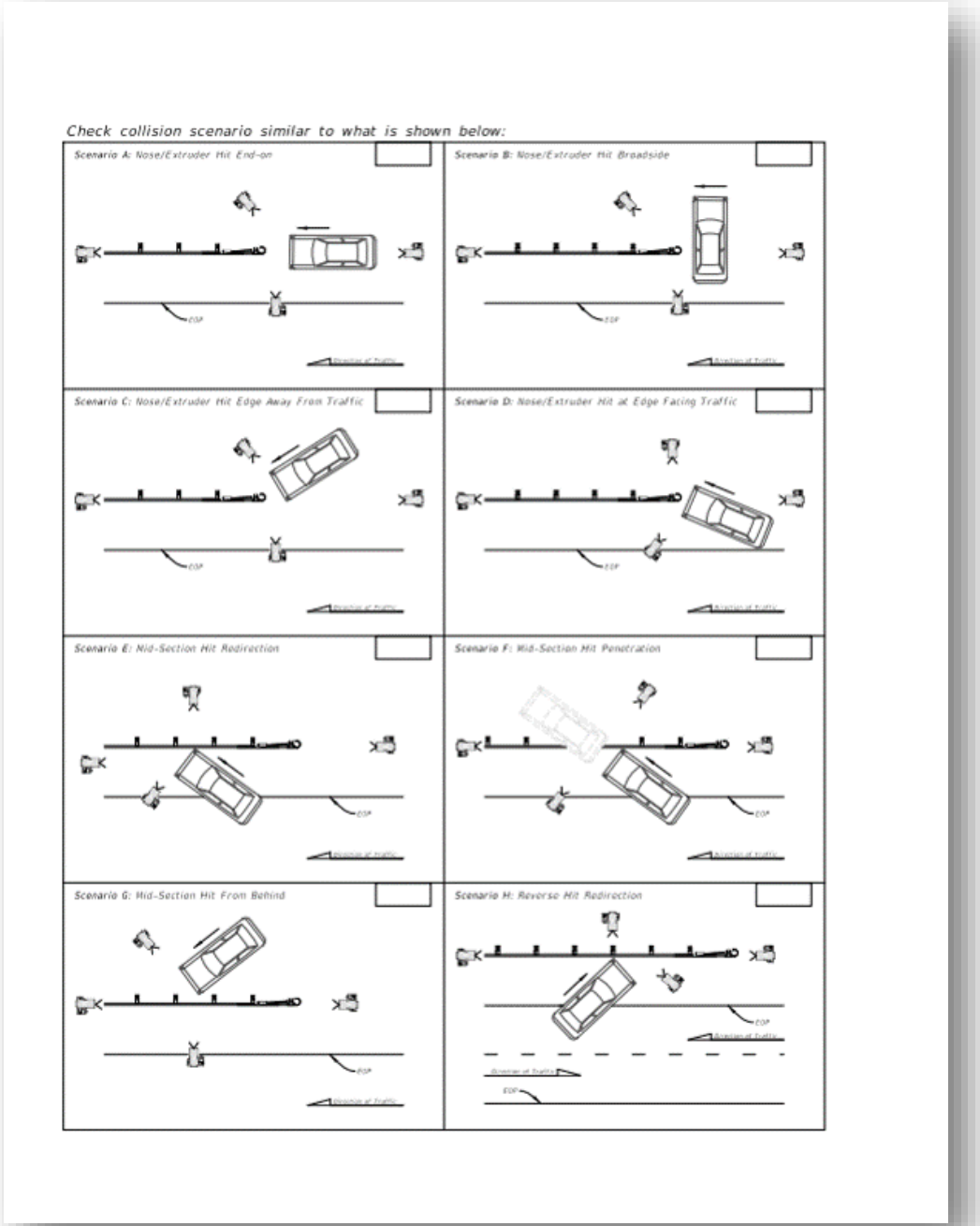


Crash Information (always document with photographs):

Date of Crash:	**Crash Report Number:**	
Time of crash: ☐ Day ☐ Night ☐ Dusk ☐ Dawn	**Crash Severity:** ☐ Fatality ☐ Injury ☐ Property Damage Only	
	Collison Scenario: _____ (Choose letter from collision diagram)	
Vehicle Make:	**Vehicle Model:**	
Did vehicle breach the approach terminal/ crash cushion?	Yes ☐	No ☐
If yes: ☐ Over ☐ Under ☐ Through		
Did vehicle roll over?	Yes ☐	No ☐
Was vehicle penetrated by guardrail/ crash cushion?	Yes ☐	No ☐
Were Multiple Vehicles involved?	Yes ☐	No ☐
Is location in an active work zone?	Yes ☐	No ☐

*Take photographs as indicated on collision scenario diagram.

Paper Forms


Check collision scenario similar to what is shown below:
Scenario A: Nose/Extruder Hit End-on
Scenario B: Nose/Extruder Hit Broadside
Scenario C: Nose/Extruder Hit Edge Away From Traffic
Scenario D: Nose/Extruder Hit at Edge Facing Traffic
Scenario E: Mid-Section Hit Redirection
Scenario F: Mid-Section Hit Penetration
Scenario G: Mid-Section Hit From Behind
Scenario H: Reverse Hit Redirection

Future of Data Collection

- Use of mobile devices coupled with software applications
- Emergence of tools to perform work in a more efficient, streamlined manner
- Paperless, cloud environment
- Statewide data reporting capabilities

eMaintenance!

eMaintenance

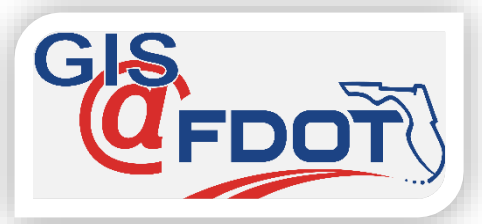
- Mobile Devices
  - Tablets
  - Smartphones
- Front End Mobile Application
  - Software development and support of
  - Electronic forms as mobile apps to allow electronic forms
  - Allowing data to be populated and uploaded in real time to a database

eMaintenance

- Back End Database where data is
  - Searchable,
  - Retrievable, &
  - Reportable

Other Offices Involved

- GIS Support
  - FDOT GIS Coordinator
  - GIS Mapping Project Manager
  - Esri
- Information Technology
  - Desktop Support
  - Tablet Support
  - Multimedia
    - How to's
    - Logos



FDOT GIS Platform

- Arc GIS On Line (AGOL)
  - Maps
  - Apps
  - SURVEY123
  - Collector
  - Dashboard
- Desktop
  - SURVEY123 Connect
  - ArcGIS for Desktop

Mobile Solutions

eMaintenance Vision

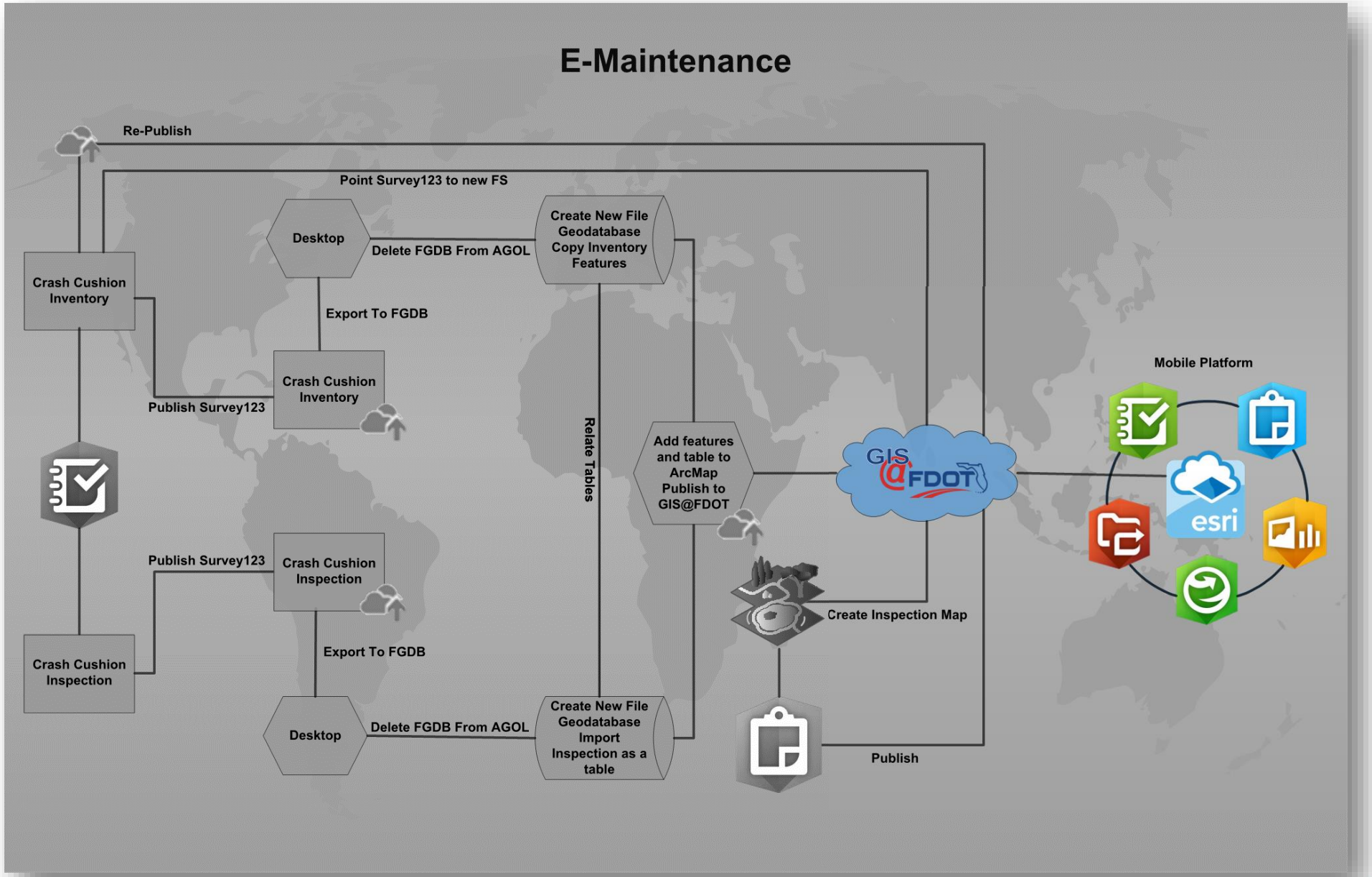
- What will eMaintenance change
- Where are we going
- Tools
- What has come of eMaintenance to date
- Visualizing the data via GIS
- The importance of eMaintenance

What will eMaintenance change?

- Reduce physical storage space required
- Protection from catastrophic events
  - Fire
  - Water
  - Building damage
  - Theft

What will eMaintenance change?

- Reduction in processing steps and time
- Fewer data errors
  - QC process in place for both
    - Users
    - Administrators

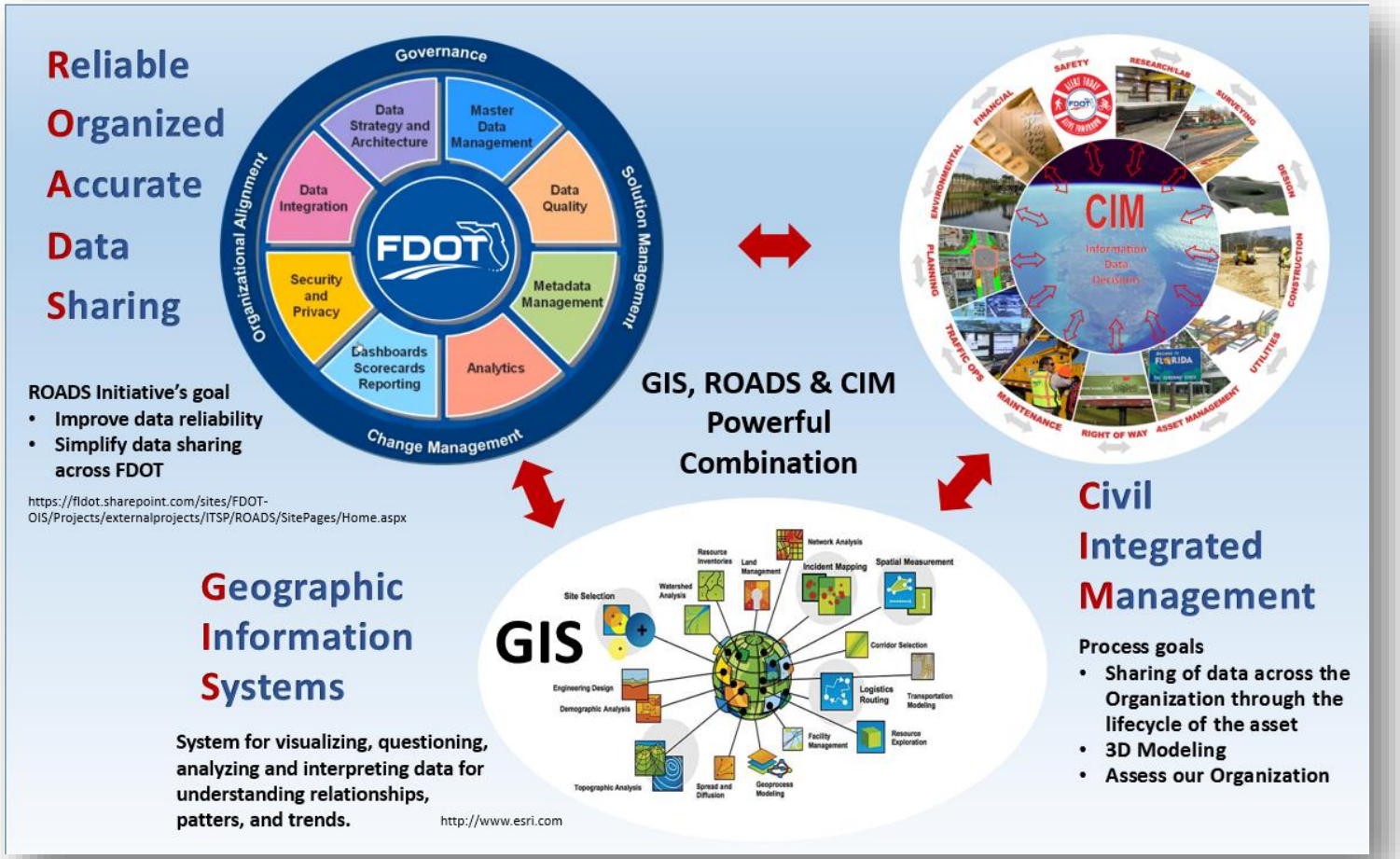

E-Maintenance
Re-Publish
Point Survey123 to new FS
Desktop
Delete FGDB From AGOL
Create New File Geodatabase Copy Inventory Features
Crash Cushion Inventory
Export To FGDB
Crash Cushion Inventory
Publish Survey123
Relate Tables
Add features and table to ArcMap Publish to GIS@FDOT
GIS @FDOT
Mobile Platform
esri
Publish Survey123
Crash Cushion Inspection
Crash Cushion Inspection
Export To FGDB
Create Inspection Map
Desktop
Delete FGDB From AGOL
Create New File Geodatabase Import Inspection as a table
Publish

What will eMaintenance change?

- The merger of all data for the Maintenance department
- Starting point
  - In-Service Performance Evaluations (ISPE) of guardrail approach terminals that have been installed on roads


SAFETY
MATERIALS
SURVEYING
DESIGN
CONSTRUCTION
UTILITIES
ASSET MANAGEMENT
RIGHT OF WAY
MAINTENANCE
TRAFFIC OPS
PLANNING
ENVIRONMENTAL
FINANCIAL
ALERT TODAY
FDOT
ALIVE TOMORROW
CIM
Information
Data
Decisions
Welcome to
FLORIDA
THE SUNSHINE STATE

CIM, R.O.A.D.S. & GIS



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Survey123

Open ▼ Details

Damage Assessment

Form by david.july@dot.state.fl.us_fdot

Last Modified: February 7, 2017

(0 ratings, 0 comments, 1 view)

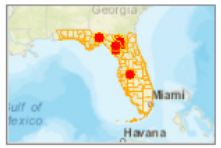
Open ▼ Details

Damage Assessment

Feature Layer by William.Isaacs@dot.state.fl.us_fdot

Last Modified: May 18, 2017

(0 ratings, 0 comments, 87 views)



Open ▼ Details

Damage Assessment WebMap

This is a BETA webmap for the development and testing of FDOT EM Damage Assessment Survey123 Application.

Web Map by William.Isaacs@dot.state.fl.us_fdot

Last Modified: April 19, 2017

(0 ratings, 0 comments, 7 views)

Open ▼ Details

Damage Assessment

This is a BETA Web Map Applicaton for the Damage Assessment Program at FDOT's Office of Emergency Management.

Web Mapping Application by William.Isaacs@dot.state.fl.us_fdot

Last Modified: April 19, 2017

(0 ratings, 0 comments, 6 views)

Tools

Initial Steps

- Document Needs
  - Existing forms
- Getting everyone in room the together
  - Prevents scope creep and spinning your wheels

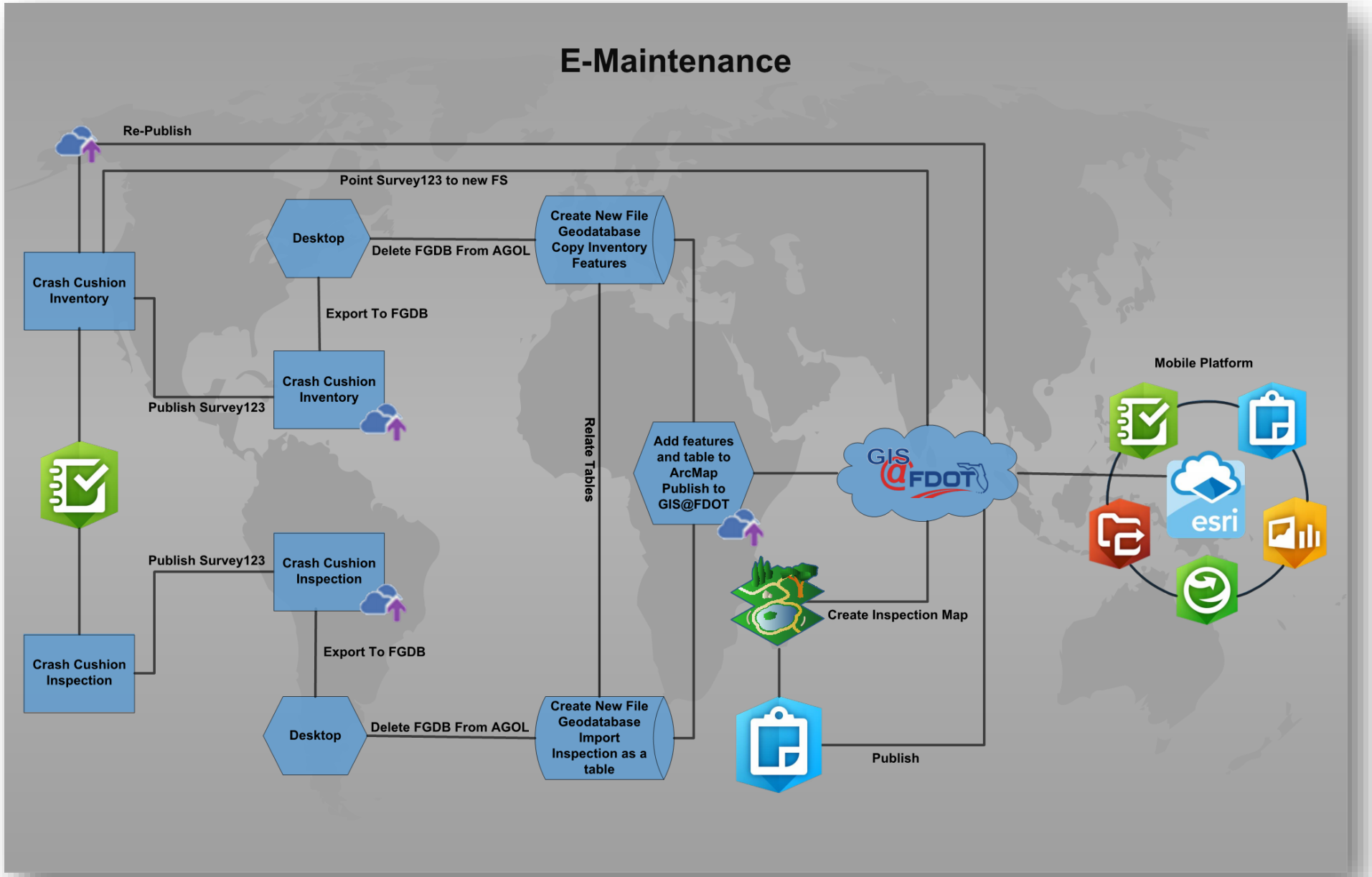
SURVEY123 & Collector for ArcGIS

- SURVEY123 did not support our needs for adding incidents to existing features
- Collector did not support our needs for creating the initial inventory

- Alone neither were a solution

SURVEY123 & Collector for ArcGIS

- Related Geodatabase Tables
  - 2 forms per feature
  - Accomplished using ArcGIS for Desktop
  - Uploaded related tables into AGOL for data collections
- SURVEY123 for Inventorying
  - Built in logic, more time spent preparing the form makes it more user friendly for field crews
- Collector for ArcGIS used for incidents on existing inventory



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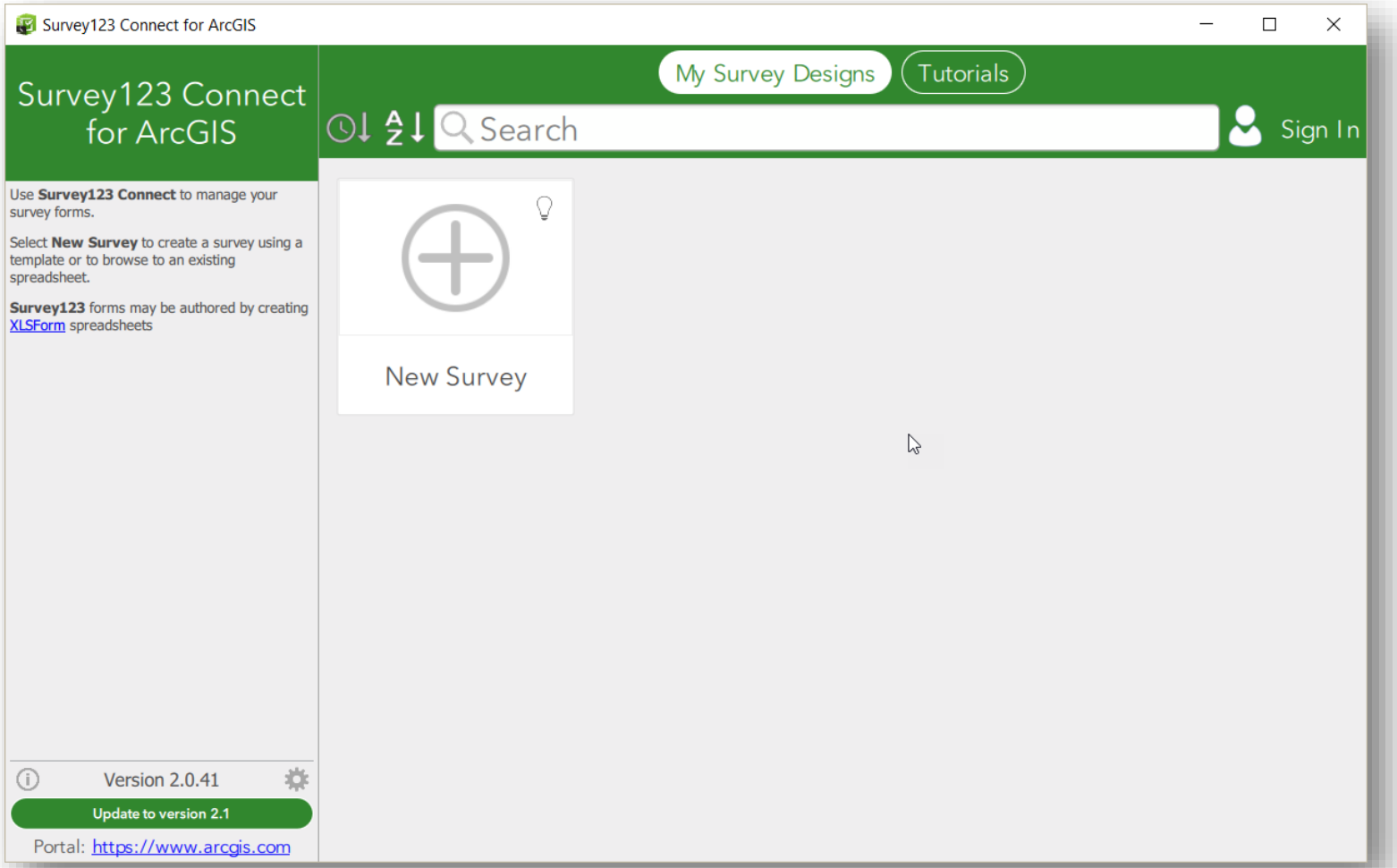
Smart Forms

- Document needs
- Survey123 makes it easy

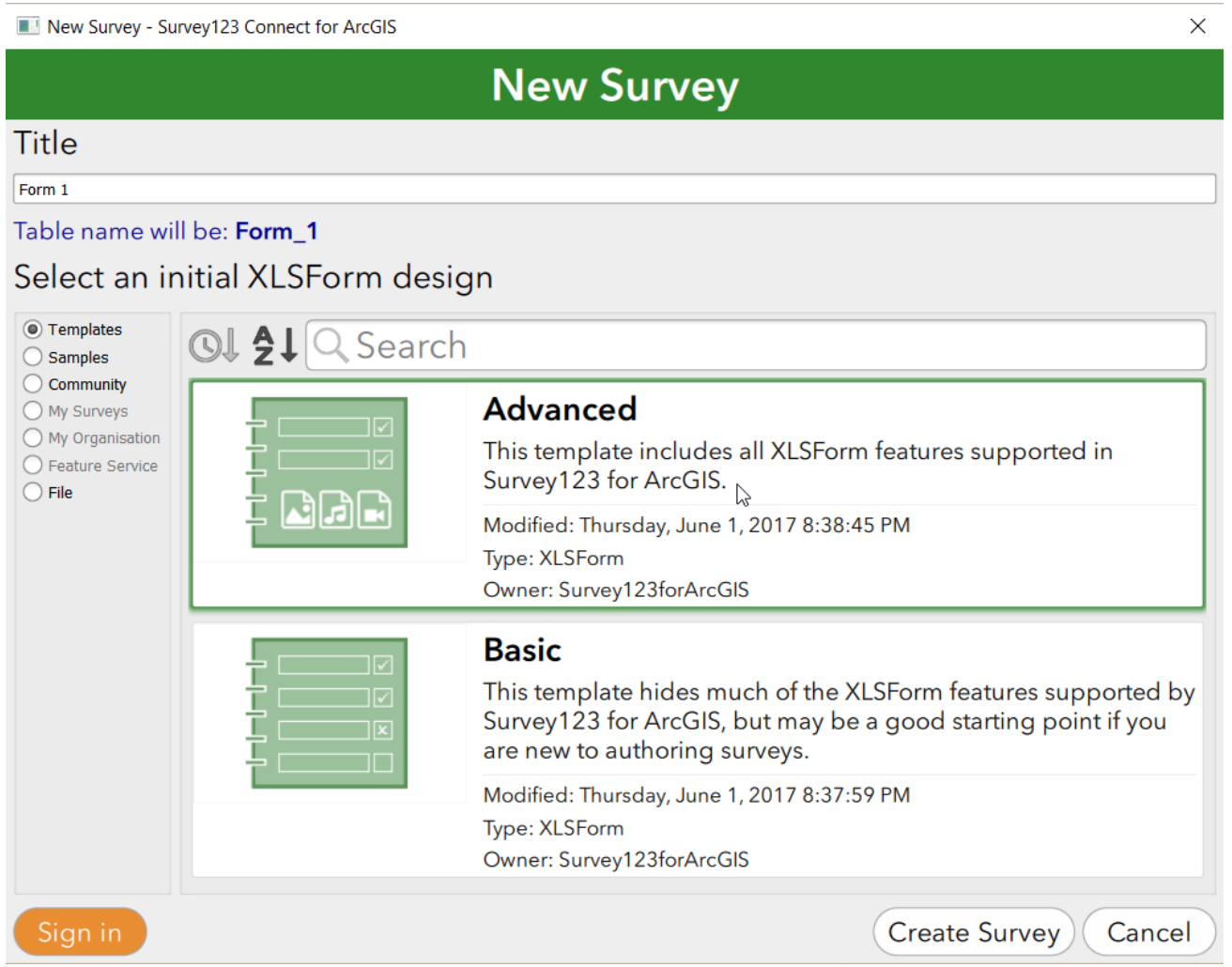


Smart Forms

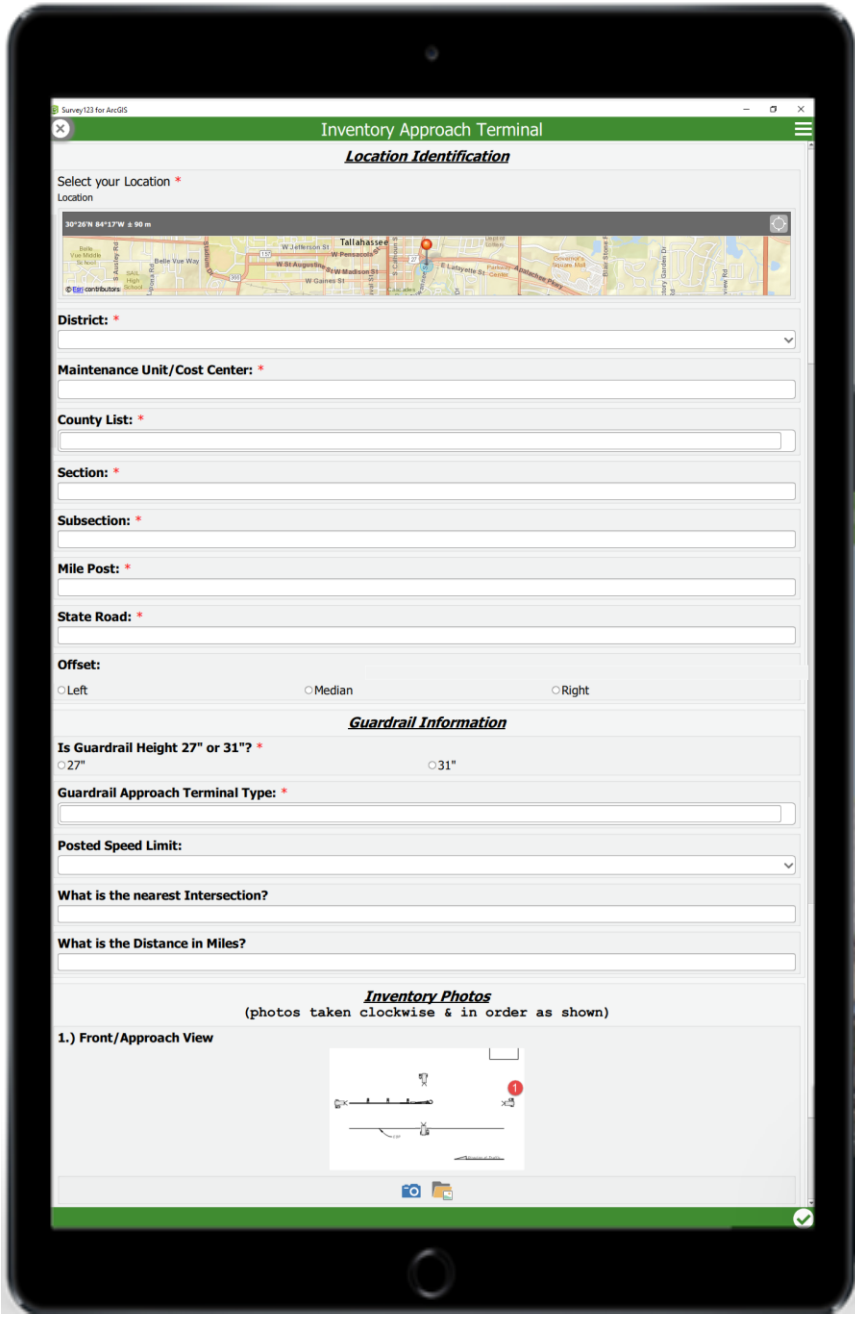
You can choose between Advanced and Basic Templates.

There are also prebuilt samples included “out of the box”

Backend



Smart Forms



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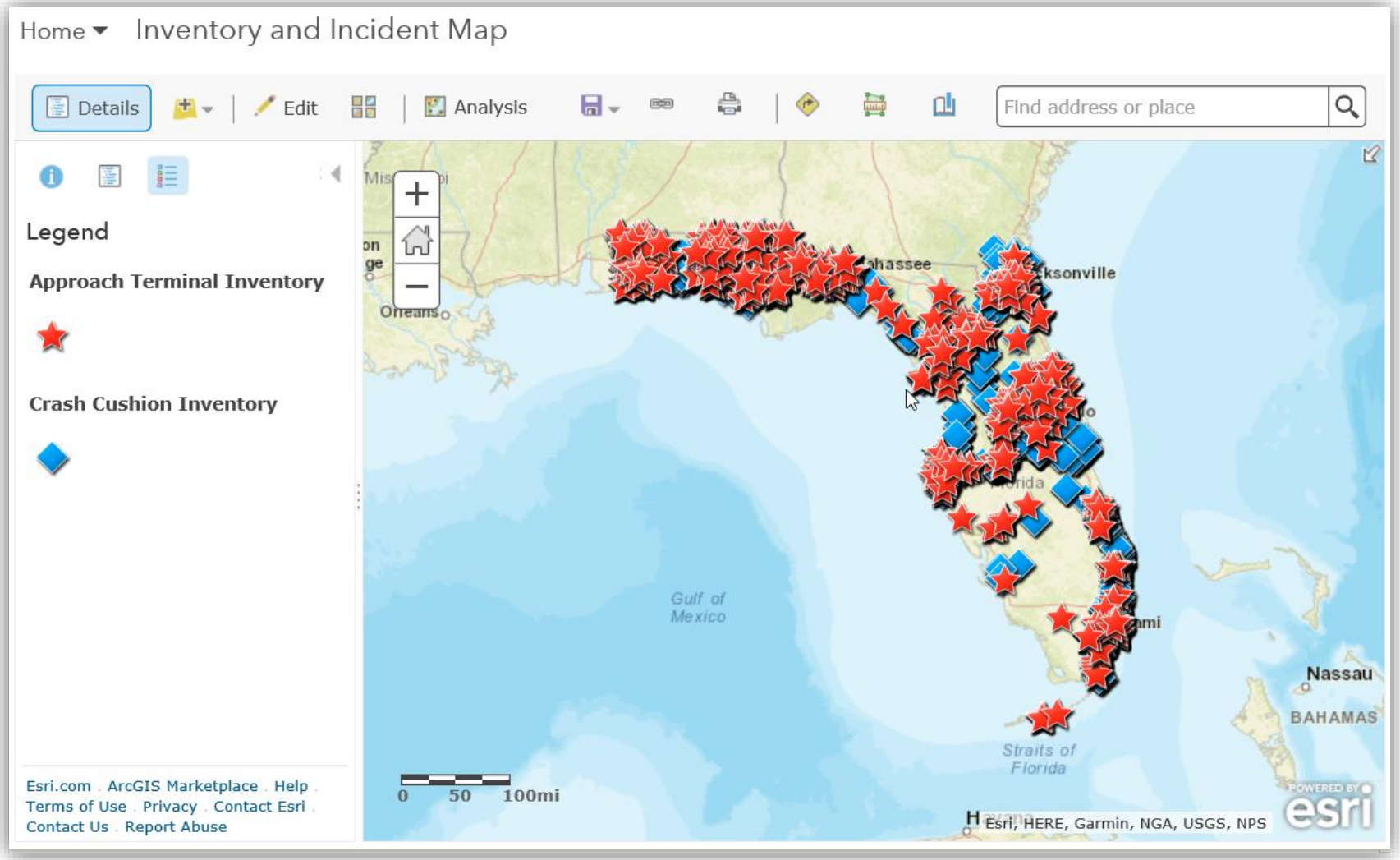
Web Maps



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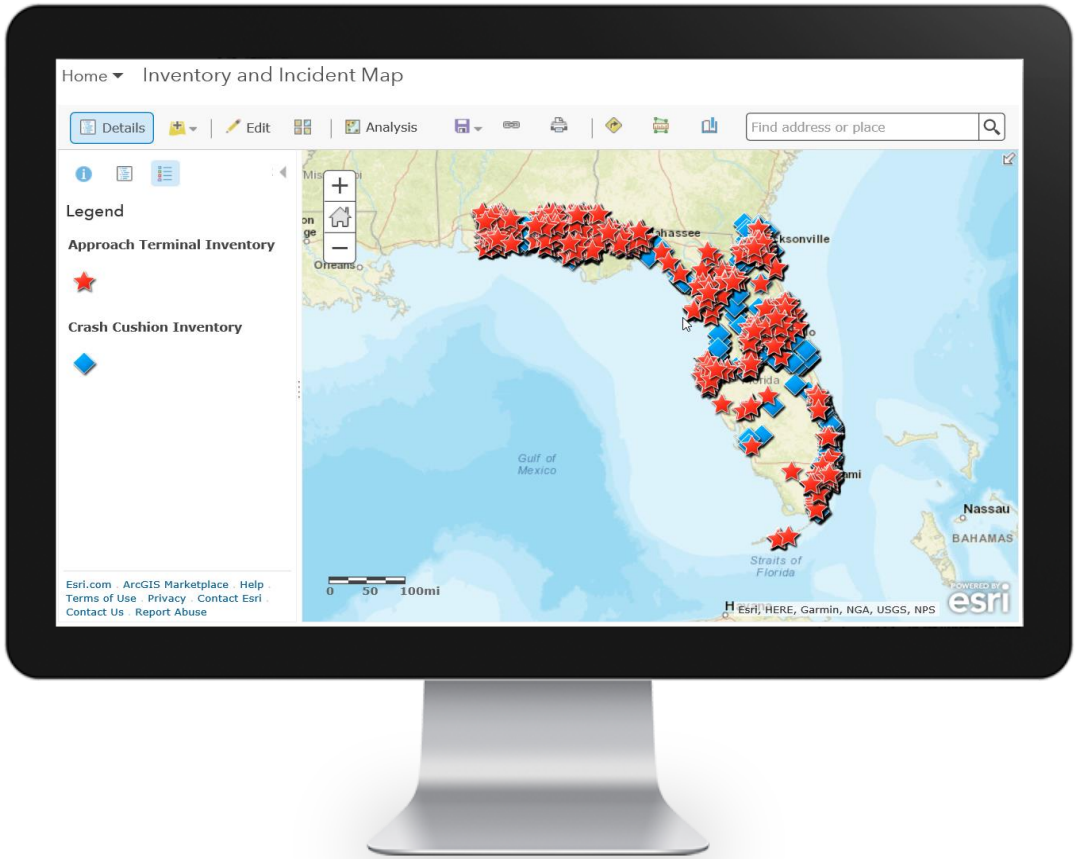

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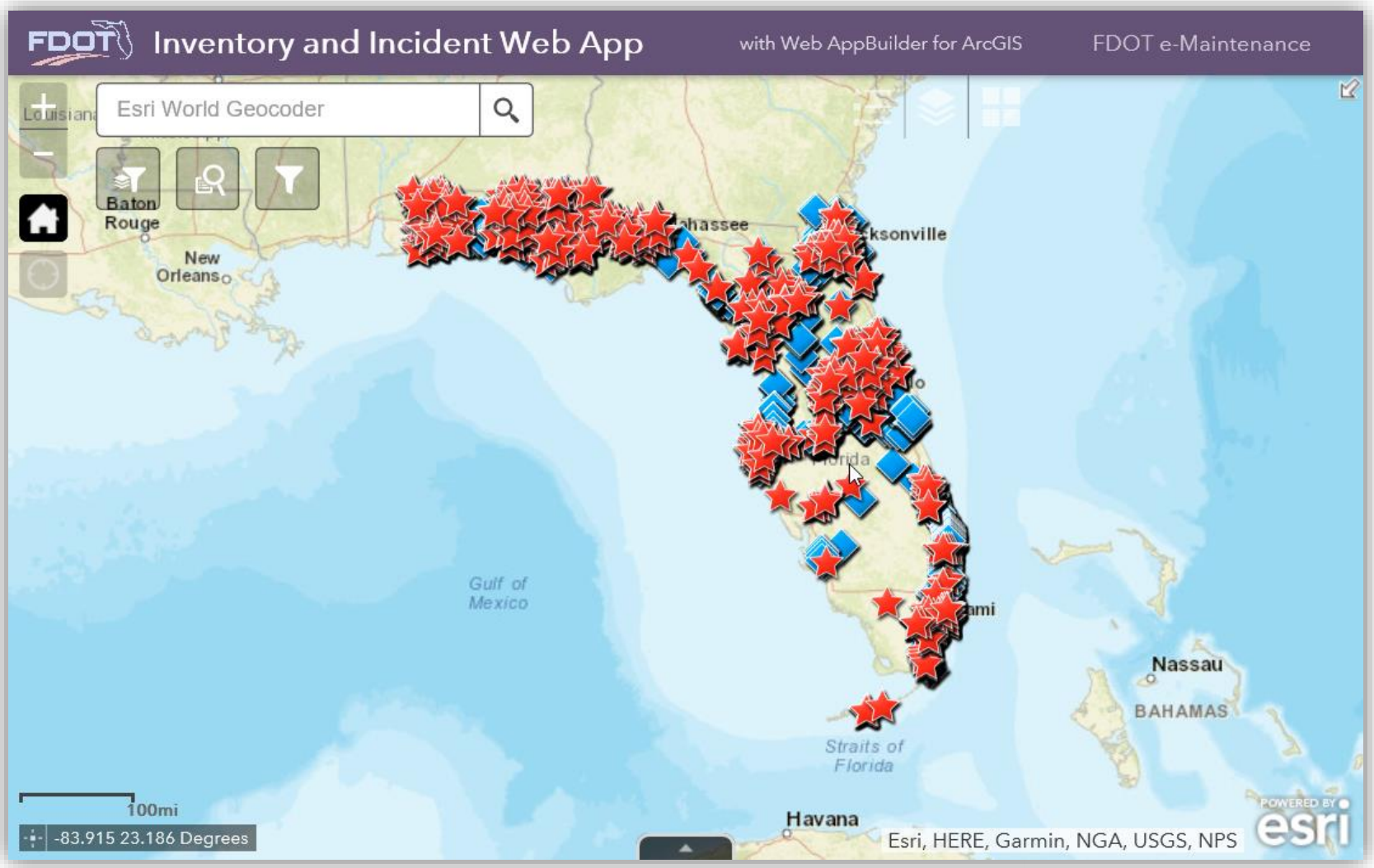
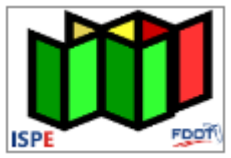
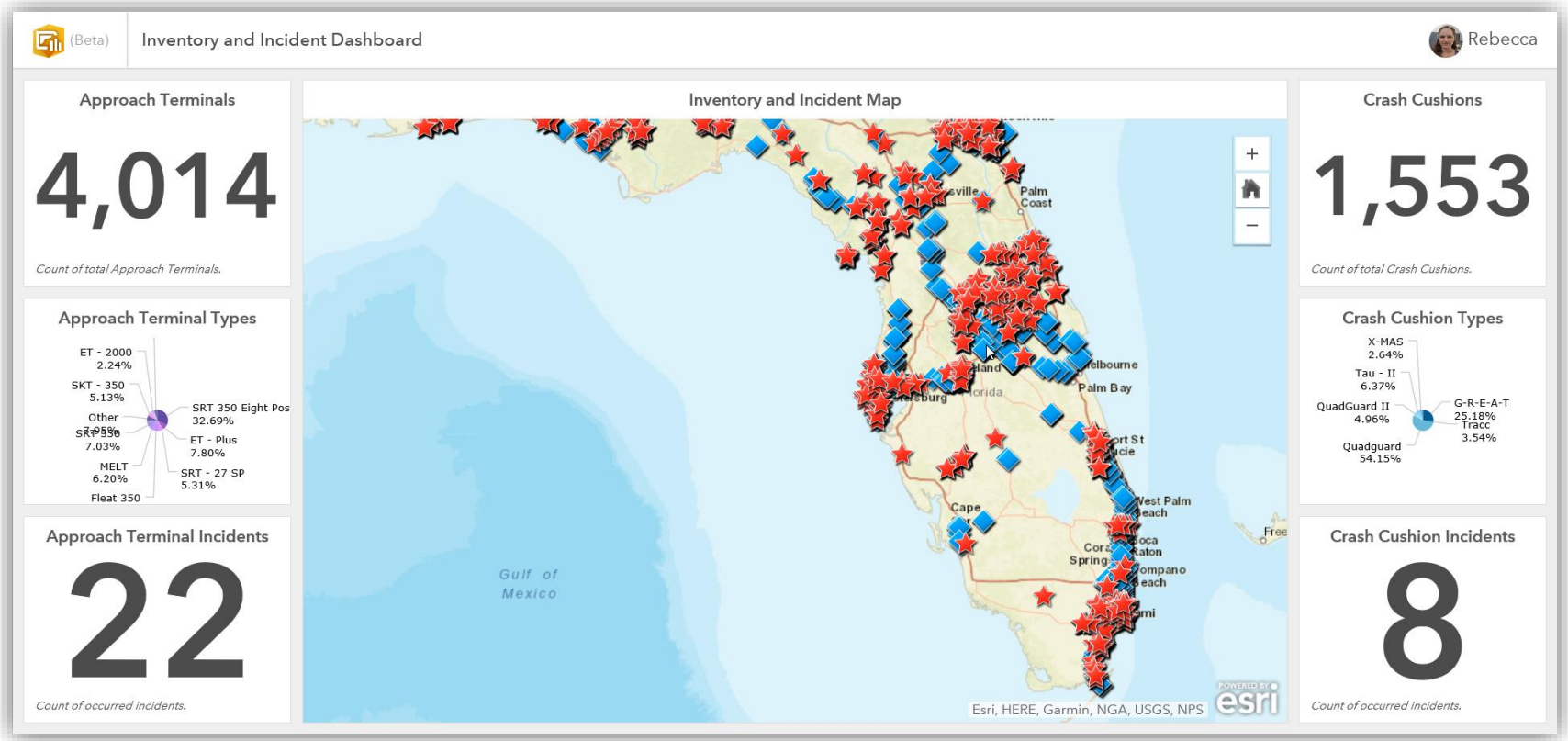
Web Apps



Information Centers





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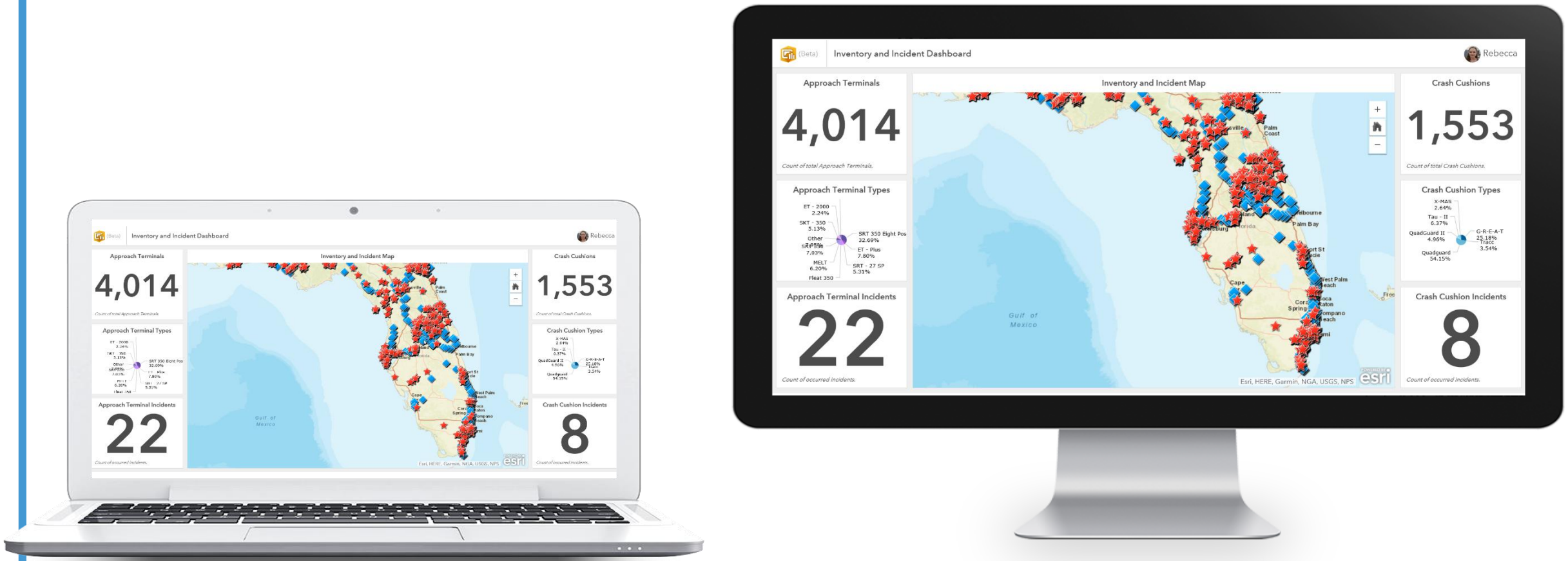
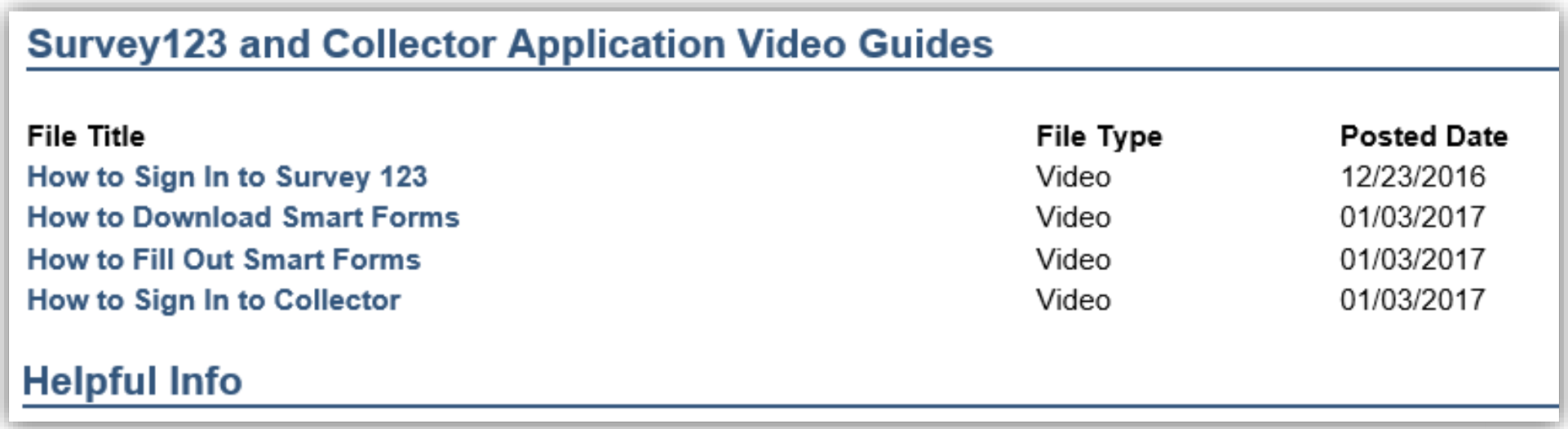
Information Centers



Resources for ISPE

- eMaintenance In Service Performance Evaluation (ISPE Website)
  - Memorandums
  - Application documentation
  - SURVEY123 and Collector Videos



Survey123 and Collector Application Video Guides

File Title	File Type	Posted Date
How to Sign In to Survey 123	Video	12/23/2016
How to Download Smart Forms	Video	01/03/2017
How to Fill Out Smart Forms	Video	01/03/2017
How to Sign In to Collector	Video	01/03/2017

Helpful Info

http://www.fdot.gov/maintenance/E-Maint/Default.shtm

Challenges

- SURVEY123 gaps
- Disconnect between mobile capabilities
- Tablet troubles
    - Department Security
    - Costs
    - Data plans vs. no data plans
- Versioning of the data
- Platform Versions
- Learning Curve for users

Summary

E-Maintenance

- Mobile devices, front end apps, back end reportable statewide database
- Phase 1. Inventory, inspection, and evaluation
- Phase 2. Contract administration
- Statewide maintenance task team

Summary

In-Service Performance Evaluations

- Gathering and evaluation of data to assess the safety performance
- Phase 1. Collection of Inventory Data
- Phase 2. Collection of Incident Data
- Phase 3. Evaluation of Data
- Joint effort between Traffic Operations, Design, Safety, Program Management, and Maintenance Offices
- Statewide maintenance task team

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